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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,111	12/11/2001	James J. Carrig	080398.P497	8950

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EXAMINER	
PERUNGAVOOR, SATHYANARAYA V	

ART UNIT	PAPER NUMBER
2625	

DATE MAILED: 01/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/021,111	CARRIG, JAMES J.	
	Examiner	Art Unit	
	Sath V. Perungavoor	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-16,18-33 and 35-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-16,18-33 and 35-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Duty of Disclosure

[1] The following is a quotation of the appropriate paragraphs of 37 CFR 1.56:

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is cancelled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is cancelled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

(1) Prior art cited in search reports of a foreign patent office in a counterpart application, and

(2) The closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and

(1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or

(2) It refutes, or is inconsistent with, a position the applicant takes in:

(i) Opposing an argument of unpatentability relied on by the Office, or

(ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

(1) Each inventor named in the application;

(2) Each attorney or agent who prepares or prosecutes the application; and

(3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.

(e) In any continuation-in-part application, the duty under this section includes the duty to disclose to the Office all information known to the person to be material to patentability, as defined in paragraph (b) of this section, which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

- Examiner respectfully requests the applicant(s) to disclose any patents and/or applications that may be material to a double patenting rejection.

Continued Examination Under 37 CFR 1.114

[2] A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 14, 2005 has been entered.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Following is a quotation from MPEP 2106.IV.B.1(a) (emphasis added):

> **Data structures <u>not</u> claimed as embodied in computer-readable media are descriptive material per se and are not statutory because they are not capable of causing functional change in the computer.** See, e.g., Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention which permit the data structure's functionality to be realized. In contrast, a claimed computer-readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory.

[3] Claims 12 and 13 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as set forth in MPEP 2106.IV.B.1(a).

- Replacing the term of "machine" with "computer" would resolve this issue.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

[4] Claim 2 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 2 recites, "output image resolution is less than or equal to the resolution of the set of training images". Examiner is unable to find sections in the specification that provide this teaching. Examiner will interprets the above limitation to mean, output image resolution is less than or equal to the resolution of the *grid or combined images* (which is supported by the specification).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

[5] Claims 1-3, 5-9, 11-16, 18-33 and 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crinon et al. ("Crinon") [US 6,285,804] in view of Plaziac [NPL document titled, "Image Interpolation Using Neural Networks"].

Regarding claim 1, Crinon discloses the following claim limitations:

A method for image enhancement comprising *[Column 1 Lines 28-33]*: receiving an input image *[Column 1 Lines 40-41]*; matching regions of the input image to other available data *[Column 1 Lines 45-47]*; forming a combined image by snapping pixel in the input image and pixels in the matching regions to a grid, the combined images containing some pixels spaced more closely than the input image *[Figure 2]*; and

Crinon does not explicitly disclose the following claim limitations:

generating an output image by applying a filter associated with set of training images to the combined image, wherein the output image resolution is finer than the input image resolution.

However, in the same field of endeavor Plaziac discloses the deficient claim limitations, as follows:

generating an output image by applying a filter associated with set of training images to the combined image, wherein the output image resolution is finer than the input image resolution *[Figure 2; Page 1648, Column 1, Paragraph 2 (i.e. training); Page 1649 Column 2, Paragraph 2 (i.e. filtering)]*.

Crinon and Plaziac are combinable because they in the field of increasing image resolution.

It would have been obvious to one with ordinary skill in the art at the time of invention to modify the teachings of Crinon with Plaziac to implement neural network based interpolation, the motivation being superior performance under noisy conditions *[Page 1651, Column 2, Paragraph 2]*.

Neither, Crinon nor Plaziac disclose a grid corresponding to a resolution for a set of training images. Applicant has not disclosed that a grid corresponding to a resolution for a set of training images provides a unique advantage, is used for a particular purpose or solves

a stated problem. One of ordinary skill in the art, furthermore, would have expected the applicant's invention to perform equally well with a grid of any resolution (provided it is higher than the input image resolution) because the grid used as a common reference to snap the pixel data and does not *seem* to be connected a training set of images. That is, the Examiner does not see any disclosure in the specification that alludes to a need for the grid resolution to be the same resolution as the training image resolution. However, if the applicant fathoms that it is consequential for the grid resolution to be the same as the resolution of the training images, Examiner respectfully goads the applicant to present it in response to this action.

Regarding claim 2, Crinon meets all the claim limitations, as follows:

> The method according to claim 1, wherein the output image resolution is less than or equal to the resolution of the set of training images (grid/combined images) *[Column 2, Lines 12-21: This rejection is made in view of the 112 rejection above.]*.

Regarding claim 3, Plaziac meets all the claim limitations, as follows:

> The method of claim 1 wherein generating an output image at a resolution finer than the input image resolution further comprises applying a least squares filter to generate each output pixel *[Page 1647, Column 1, Paragraph 2: least mean square (LMS)]*.

Regarding claim 5, Plaziac meets all the claim limitations, as follows:

> The method according to claim 1, wherein generating further comprises applying the filter to generate each output pixel *[Figure 1]*.

Regarding claim 6, Plaziac meets all the claim limitations, as follows:

The method according to claim 5, wherein the filter comprises an optimal least squares filter for each output pixel *[Page 1647, Column 1, Paragraph 2: least mean square (LMS)]*.

Regarding claim 7, Crinon meets all the claim limitations, as follows:

The method of claim 6 wherein the optimal least squares filter for each output pixel is based on an irregular sample grid *[Column 2 Lines 16-21: Interpolation value is based on the irregular sample values.]*.

Regarding claim 8, Crinon meets all the claim limitations, as follows:

The method of claim 1 wherein other available data may change over time *[Column 1, Lines 28-33]*.

Regarding claim 9, Crinon meets all the claim limitations, as follows:

The method of claim 1 wherein the image and other available data are video images in a home networking database *[Column 1, Lines 28-33; 42 on Figure 7]*.

Regarding claim 11, Crinon meets all the claim limitations, as follows:

A processing system comprising an electronic data processor, which, when executing a set of instructions, performs the method of claim 1 *[40 on Figure 7]*.

Regarding claim 12, Crinon meets all the claim limitations, as follows:

> A machine-readable medium having stored thereon instructions, which, when executed, perform the method of claim 1 *[42 on Figure 7]*.

Regarding claim 13, Crinon meets all the claim limitations, as follows:

> The machine-readable medium of claim 12 wherein the input image is retrieved from and the output image is stored to a home networked database *[42 on Figure 7]*.

Regarding claims 14-16 and 18-22 all claimed limitations are set forth and rejected as per discussion for claims 1-3 and 5-9.

Regarding claims 23-24 and 26-28 all claimed limitations are set forth and rejected as per discussion for claims 1, 2, 6, 8 and 9.

Regarding claim 25, Crinon meets all the claim limitations, as follows:

> The system of claim 23 wherein the first and second video images have missing pixels *[Figure 2]*.

Regarding claims 29-31 all claimed limitations are set forth and rejected as per discussion for claims 1, 3 and 6.

Regarding claim 32, Plaziac meets all the claim limitations, as follows:

The apparatus of claim 29 wherein applying a filter to the combined image pixels comprises applying the filter by a numerical tap method *[Figure 3: input]*.

Regarding claim 33, Crinon meets all the claim limitations, as follows:

The apparatus of claim 29 where the means for forming a combined image comprises means for motion compensation *[Column 1, Lines 40-47]*.

Regarding claims 35 and 38 all claimed limitations are set forth and rejected as per discussion for claims 1, 2 and 3.

Regarding claims 36 and 37, Examiner asserts that coupling to a home network is well known in the field of computer systems. Furthermore, the applicant has also admitted to it as prior art *[Drawings: Figure 1]*.

[6] Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crinon in view of Plaziac further in view of Nagashima et al. ("Nagashima") [US 6,275,988].

Regarding claim 10, Crinon and Plaziac disclose the claim limitations as set forth in the discussion for claim 1.

Crinon and Plaziac do not explicitly disclose the following claim limitations:

The method of claim 1 further comprising the transfer of a payment before the output image is viewed by a user.

However, in the same field of endeavor Nagashima discloses the deficient claim limitations, as follows:

> The method of claim 1 further comprising the transfer of a payment before the output image is viewed by a user *[Column 8 Lines 35-43]*.

It would have been obvious to one with ordinary skill in the art at the time of invention to modify the teachings of Crinon and Plaziac with Nagashima to incorporate a payment system, the motivation being to charge an user for the service *[Column 1 Lines 20-25]*.

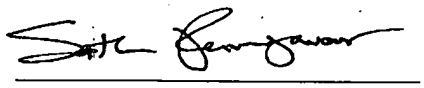
Contact Information

[7] Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mr. Sath V. Perungavoor whose telephone number is (571) 272-7455. The examiner can normally be reached on Monday to Friday from 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Bhavesh M. Mehta whose telephone number is (571) 272-7453, can be reached on Monday to Friday from 9:00am to 5:00pm. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dated: December 29, 2005

By: 

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